Through the Duty Release Authority (1980) 3 (2011) Clarify Actions (1980)

POST INSTALLATION CHECKOUT PROCESS SPECIFICATION FOR LM GAN STRIPM (SSC) WITH LUMINARY PLICIT ROPES

Record of Revisions

Date	photos series			S. Approvals				
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This specification consists of page 1 to 100 inclusive.

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APPROVALE			1 - 1 1/1/2
	NASA/MSC	MTT/TL	Godas Milland
	Section 1981		111-1-23-1-1

- X to INTRODUCTION
- 2.1 The individual Spacecraft (SC) installed Onlines and Noviesian (GES) System to be checked out per this process specification shall possible of one of each of the following major assemblies. The applicable part combers shall be determined by Drawing No. 6014888.

Assembly Name

- L Apollo Guidance Compiter Group
- 1 Inertial Meas. Unit & Polse Torque Associati
- 1 Coupling Date Unit
- I POWER and Servic Association
- 1 Computer Control & Briticle Dimmer Assembly
- I Gab Intercomect Harness Assembly (LEM)
- 1 Hynal Confidency Assembly
- 1 Navigation Base Assembly (LEM)
- I a Alterment Civilinal Telescope at EMI
- 1.7 The GMN System havein shall be identified as a LM system. The computer annual the program flight ropes in the core rope memory. The less requirements have any hand or CUMNARY 26 flight programs.
- ELO. SCOPE
- 2.1 This specification outlines the checkout requirements for GAN System installed in a Linux Module Vehicle. Addendum to this specification will cover any special checkout requirements associated with Individual schooles. GAN Systems and Computer Plant Programs.

- 1, 5. 1 Checkout Equipment (ACE) for the Power and Serve Assembly Adapter Medule
- (Cost) (PSAAM) and Righal Conditioner Assembly (SCA) performance. FRAAM and eigen) conditioner stability uncertainties are included in Asymmia L.
- b. 6. In the seest of a smallest between requirements, the following arter of procedures whall apply. The contractor shall also notify AC Electronics Size Manager of the conflict.
 - s. The contract
 - h. The Specification
 - Documenta referenced in this specification.
- N.T. Beton Brost remeats
- 5.7.1 IRSG and FEPA data (See Paragraph 5.3:3)
- 5.7.1.1 If D₁, D₂, or D₃ exceeds its maximum value as specified in 6.3.7 for my little or PEPA, a retest sequence shall be initiated as indicated below:



RETEST SEQUENCE

The retest engance shall be performed using the paragraphs indicated in Table 1 incresponding to the out-of-open parameters. Table II indicates the lest positions to other lesisted parameters that must be recalculated and qualified.

- If D_1 , D_2 , and D_3 are within tolerance after the reset sequence to completed, the original out-of-following terms calculated in 6.3.9.32.6 shall be examinated.
- 5.7.1.2 Failure to be within the maximum values of D₁, D₂ and D₃ after the retest sequence of 5.7.1.1 shall constitute a failure of the assembly.
- 5.7.1.3 If sathority has been obtained to degrams a PIPA, then data taken prior to the degraming of that PIPA shall not be used in the future to calculate stability forms. After
 derivating, the retest sequence of Paragraph 5.7.1.1 must be revioused.
- Tailure of the GEN System to pass any examination or test specified begain shall tentatively classify the GEN system as non-conforming. Normal test sequence may be continued upon determination of the cause of the monconformance or at the discretion of the GEN commenter test than if it is determined that such action is not detriminate to the GEN System or other interfacing subsystems. All nonconformances whall be investigated and cleared by salvers (F.N.N), correction of specification, or hardware replacement and return to the laboratory where the salfactane shall be regimed. Only often maliancing verification shall a filight certified replacemble element be installed to the GEN System.

HETERL MATRIX														
Paragraph Number	Test Title	100	DACE			int-cpt	Desty	A BARNESS	IL HARNESS	Computer Control				
Number 6.5.1	Standby Power Cn.Test	X												
	Alarma and Interrupts Test													
	LMT Operate Power on Trut													
	Temperature Control Verification										+20			
	PGNOS Power Supply Test				8				X					
	GIN Operational Test Seed Agriculture Mode Test								X					
	Senti-Artimatic Mode Text													
	LING Scale Pacter Test										X			
	IMU Performance Test													
	LGC Veltage Margin Test													
	LGC Clock Frequency Test													
6.5.32	LOC Clock Programy Test Carbol Sciences Test			×										
5.3.12	Stabilization Loop Besponse Test													
	GaN Fine Alignment Test													
	ACIT Familional Performance Test													
	Flight Repe Fixed Memory Bank													
	Suni Chink													
	hardebb control test													
	Emergency Shutdown Procedure													
	Normal Shutdown Procedure													
	Initial Turn-On Procedure													
	General Turn-On Procedure												2	

* To be used an necessary to bure system on or off.

** Procedure from Specification ND1002313 with AURORA 88 ropes installed.

- 6.6 DETAILED BEQUIREMENTS
- Initial Test Conditions
- 6.1.) The IMU shall be supplied with heater power on a common tasts. The pertable transportance controller (Model No. 230-13058) whall be assessed at all times although heater power may be supplied from the *26 VDC IMU STANDEY for unit monitored through ACE.
- 8, 1, 2. The IMU shall sever be without bester power longer than 15 minutes.
- 4.3 Operational Regulatements
- 4.1.1 Emergency Shutdown Procedure
 - CAUTION: In the event of any multimetion which might downers the GAN System before the normal shutdown procedure in 6,2. I can be performed, power shall be removed from the GAN System as soon as possible.

 If at all possible, without creating any delay, IMU Operate Power should be removed first.
- 8, T. 2 Stermal Shutdown Procedure
- 5.1.7.1 The mermal stundown of a G&N System shall include parking the gimbals prior to removing DSU Operate Power. This is accommissed in the following procedure.
- 6. 2, 2, 3 On 6-16t enter the following sequence

YERB 41 SOUN 28 ANTR +08600 ENTR +08600 ENTR +08600 ENTR

6, 2, 2 On the CRT, verify the following platform impass are staplished:

MG is between 15T and 663 degrees MG is between 66T and 663 degrees OG is between 357 and 663 degrees Verify GEMBAL LOCK lamp is lift

- 1, 2, 3, 4 Pull out via VDC IMU OPERATE erroug begaler on LEM Calus Famil 11 to remove IMU OPERATS power.
- 6.2.2.4.1 On K-148 enter the following

VERB 21 NOUN OF ENTH-00004 JENTE 00000 JENTE S. C. C. 4. 1 YERB SI NOUN HE ENTR

(Cont) V1828 ENTR 40000 ENTR Viceto NO ATT lamp to GFF

- 6.3.3.) Pull out +28 VDC LGC OFERATE circuit becaler on LEM Calch Panel II to remove
 LGC OPERATE power.
- 2.1.2.6 Pull out +25 VDC IMU STANDBY circuit brunker on LEM Cabin Panel 11 to remays IMU STANDBY power.
- 5.2.3 Initial Turn-Un Procedure
- 5.2.2.1 The initial power turn-on sequence shall be in the order specified in the mat you common (5.2) observing all cautions and delays as specified.
- 0.2.4 General Turn-On Procedure
- a. z. d.). This emp shall be effective only after having completed the initial turn-on procedures.
- E. 2. 4.2 Proper coolant flow shall be swnfled.
- 5.7.4.2 Depress was VDC INU STANDEY circuit invoker in LESt Calin Famil 11 to supply INU STANDEY power. Record time.
- C.E. A. 4 Depress with VDC LGC OPERATE circuit breaker on LEM Calls Panel 11 to Supply LOC-OFERATE power. The Restart large may come siz. If it shee, press REET on the DREY.
- 5.7.4.5 On K-544, enter the following

VERB SE ENTE

- 6.1.4.0 Verily K-START tape Piklone-Kinnin-XX LM Self Chief, Test is on the K-START tape reader, where XX equals tape revision number.
- S. J. A. T. Shart tape resder.
- S. 2. S. W. When tape render stood, verify:

R1 = +165CXX

H2 ~ +10538 Player mumber?)

R3 - DECKX (tape revision number)

- 6, Z. 4. b Start tape reader.
- 4.1. t. 10 When tape reader stope, vertly:

R1 = 00101

- 6, 2, 4, 11 Start tape reader
- 5.2, 4, 12 Monitor DEKY mani RE (SCOUNT+1) increments twice. If an error is detected, the PROG alarm large on the DEKY shall light,
- 5.2.4.12 On K-165 enter the following to turn off Sulf-Check:

VERB EL NOUN ET ENTR

- E.2.4.14 CAUTION: LGC OPERATE and IMU STANDBY power must have been applied a minimum of two hours before energizing the IMU OPERATE circuit breaker in Span E.3. 4.19. unless all of the following conditions are met:
 - IF: I. The GAN System has previously been in Standby Mode at least two hours and subsequently been in Operate Mode, AND
 - I. The elmbuls are placed in a parked position prior to shutdown, AND
 - 3. The shankown period did not sugged a days, AND
 - The Spacecraft or IMU have not been moved to any way during the abutdown period.

THEN: The tep-hour standing Mode operation requirement is reduced to 15 minutes.

- S. J. 4. 15 The DAN System is defined as being in Blanchy Mode for LGC OPERATE and MRU STANDBY power is applied and INU OPERATE power in all. The hertical components shall have suspension power in Standing Mode.
- INU STANDBY and IMU OPERATE power are upplied to the system.
- v. 2. 4. 17. But up analog seconder to mostler the following nightle:

nal 360.	Signal Name
CG 3166	16 Servo Error Total
GG 2166	OG Beryo Error Total
GG TIII	IG 1X Resolver Sine
GG 2172	OG 1X Bracker Blus
GG 2142	MG 1X Bandyer Eine
GG 1201	IMU 25V 1E 300 CES

- 6.3.4.18 On CRT, monthly +120 VIC PEPA SUPPLY (OG 1040) and IMU Girshal angles. Record time. If 15 minutes have clapsed since performing Paragraph 6.2.4.3, proceed to the next paragraph.
- J. J. J. 19 Press in 428 VIX IMU OPERATE circuit breaker on LEM Cabin Panel 11. Record time.
- 6.2.4.20 Verify on the analog recorder that the oscillations of the rusebur size signals (GG 2112, GG 2172, and GG 2142) are not sustained and that the algorish dump out within 15 seconds. If this condition is not attained, remove lift! OPERATE power immediately.
- c. 2. 4.21 On the CHT, verify absence of -120 VDG PIPA SUPPLY veltage for Board seconds after Step 5.2. 4.20 is inflinted. Verify that this voltage is between 114 and 126 after 100 seconds from Step 6.2.4.20.
- 6. Z. 4. 22 Verify that LGC Warning and ISS Warning lamps in the LM cabin size OFF.
- s. J. 4. Ed On the CRT, verify all IMU Chabul angles are between 557 and 603 degrees;
- S.Z. 4. 24 On K-148, enter the following sequence:

VERUS 41 NOUN 20 ENTS +00000 ENTS +00000 ENTS +00000 ENTS

- Co the CRT, sean the power supply voltages to verify their normal operation.
 (No instructions Binking.)
- 4.2.4.24 After all the tests of 6.3 flave been completed, the General Turn-Dn Procedure (n.2.4) and IMII Operational Test (6.3.4) shall be completed before retuning any test. Otherwise, the frating asquares shall continue in securdates with Figure 1.
- 4.7. 6 Interruption of Power
- 7. 7. 7. 1
 DMD Operate power shall never be applied without the presence of LOC Operate and DMU Standby Power.
- 6.7.5.7 The G&N System log book shall include the gliminal positions at time of power shockers. If contited, it shall be assumed that the graduals were del partied period to shadows. The log book shall also state if any newsment of the three or Systemerals has taken place after shadows. The times of application and removal of any last power to the G&N System shall be recarded.

After the system the best operation with Dirth Courts power of the first power of the fir

E.I. o Warmap Partoc

A warmup period of at least one hour in Operate Mode is required prior to performing any test in which give or accelerometer parameters are assaured, and at least 15 minutes prior to any test in which precision amplitude and frequency power supply checks are made.

1.3 Test Procedures

6.3.1 Standby Power On Tests

- A 3.1.1 The Portable Temperature Controller, Model No. 400-31058 shall be supplying inertial component heater power to the GAN System through connector 5631 (P230). If singer or fall melections are present on the PTC, they shall be cleared by depressing the SYSTEM RESET makes as the PTC.
- The following switches and/or circuit breakers shall be closed to unargize the indicated mass. On Fanci 5 rotate ANUN/NUM discuss to minksom discorrable trigingum. On Panci 5 set the Lightning Oversum with to OFF.

LOCATION	NOMENCLATUR		STIFIC	STR	
	BAT S NORMAL PERD				
	BAT 6 NORMAL PEGS		4511		
	X LUNAR BUS TIE		ACB5		
	PAT 1-4-6 FEED THE		4CB1T		
			aCBds		
			DC St		
	DC BUS VOLT				
			aCB16		
	X LUNAR BUS TIE . *		ACB4		
	BAT 1-4-6 FEED TIE				
Punel 13	BAT 2-3-5 FEED THE				
Panel 11					
Penel 11			aC2w		

LOCATION	SOMENCLATURE	DESTIFICATION
Panel 16 Panel 14 Panel 11 Panel 11 Panel 11 Panel 16	INV. NO. 2 AC PWE to DNV I POSITION AC BUS PEED THE AC BUS VOLT LTG ANUN/DOCK COMP LTG ANUN/DOCK COMP	4CDID 4S14 4CB24 4CB27 4CB146 4CB1441
	r Turn On	
Press in 129 VDC Record Unit.		
Verify on the Even chinality is very to believe to 22, 8 and	d Bicomber that 45% VINC IME ST in CRT 425V IMD STANDIN Bus 53, 5.	ANDRY power discrete (DCISIO) shall indicate
	displayed on CRT, shall be came a the PEPA Temperature Control prure of 130sS. 0 Deg. F. 906 22 I record FIPA TEMP. The PIPA	
	Tues On	
Prese in 48 VDC BESTART light in	LGC OPERATE openit breaker up be ON, herify LGC Warning is	on List Collen Provid 11.
Un CRY, "25V LO Verity on event to DSSE, water VER clear.	C Operate Bus (GG 1530) shall be conder that she'v LGC OF (GG 15 IS 20 ENTH, then proce ESET. I	Alle Compater Alberta de La Compater Alberta
Un CRT, the *14 14.4 VDC, Resort	VDC LGC SUFFLY (DG 1829) sho of this value.	II indicate between 12.9 and
	000 CPS SUPPLY (OG 1031) shall Record this value.	
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LOC mill-Check,		

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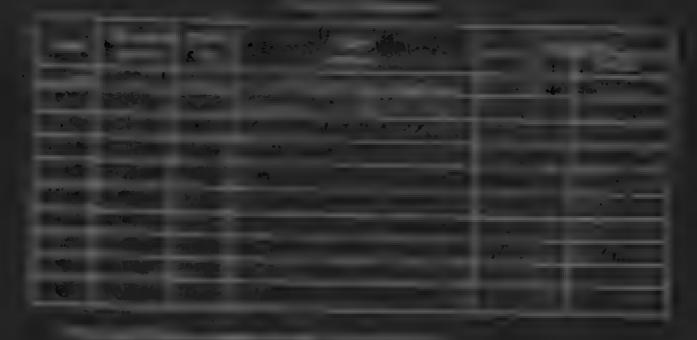


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- a. On the DSKY, the RESTART lamp is lit.
- b. The PGNS Caution lamp is lit.

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APOLLO GAN Specification

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fine i - line j = ()	PIPA Y2G	

CALCULATE OF	PARAMETER	UNITS.
1955.46 — line at x 1 cm/sec pulse ~		nul=c
1.158.43 - line ag x 1 cm/sec/puise =		
1908.40 — Non all at 1 cm/sec/police Laborate 1, 000000 from this value. 1 - 1 (like 1 = line c) = ()		m/sec



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31. 31000	(cies	
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Z FIPAS, F. etms		
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Insure that the GAN System is in the Standby Mode.

and 38. 6 wie (GG 1820).

Voltage Fail Determization

r to comment

R6,040. 5 yels, and executed

light on the CATTHON/WARMING panel is on.

VOLTAGE FAIL switch to UN.

Becard the final C-START setting 6.3.10.2.10 6.2.10.2.15 4, 9, 10, 2, 15 0, 3, 10, x, s 14. 44 9. 5 vdc. and execute.

5, 2, 10, 2, 21.

3,8,10,8,2

AMDLLO GEN flyacificatio

Yestly the RESTART light in off. 13, 30, 3 13.83.56.53 6, 2, 10, 3, 1 is found to Appendix II) Load E-Memory Program 6, 3, 10, 3, 4, 6, 2, 10, 8, 6, 6, 9, 10, 3, 7

Record the final C-START setting.

LGC Cock Fre west. Test

10 provious rondings shi

Enter the following or

Proce and held the Pato punishtation (
the arBY lamp to not Ht. Restart b

And the second second

on K-140 color the following.

On 18-348 under the following:

Chancre that DSKY Row 1 displays 60010.

Observe that DEKY Row I displays work.

RESECT Pushbutton To:

lieticle Dimmer essembly

AMOUTO GMI finacification

1, 2, 11, 12, 20 Cit outly FAILREG = 00133

Alberta and

could away from Pi back to fifth the point.

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APOLLO GMI Specification

VERB 41 NOUN 20 ENTE

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VERB 41 NOUN 20 ENTRI

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ATOLIO GEN Specificano.

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ig -360° Torque

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R33143338

ND1002380 RE

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Division in Line

od - 200 Torque

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ANTONIO S. L. C. MARIE ANTONIO S. C. MARIE

APOLLO GAN Specification

TUD1002380 REV

the following

6.5 12.235

following sequence:

VERB 41 NOUN 20 ENTR

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A OLLO GAN Specification

ENTR ENTE

TATER (ORCE)

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APOLILO GAN Specific

i G Servo Error Telal

IG Torque Motor Current

RG 1X Mesolver State

G 1X Resolver Cosini

G CDU Fine Error

APOLLO Gill Spacificati

Moss. No. 1 Signal Hamel

a. GG Stree Error Total

b. Cold States 1985 States on Keyner an Jennife.

APOLLO GEN Speciale **
ND1002380 REV

APOLLO GAN Specifi

TO THE LOOP RESPONSE TO SHIPLING

1,15,5,2

APOLLO GEN Specification

NEEDOZZBO REV /

APOLLO GEN Specificati

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3. 3. 11.19 On K-148 enter the following sequence:

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OOTH PARTY

ENTH OFFIAVO from 6.3.15.7.2

11 = XXX, XX (Cursor Angie)

0.0.15.31

THE - NOON, NOW (CORROLD AMERIC

13 - MARKE (Position Code)

On K-148 outer the following sequence:

Verify that VERB 01 |

D-6.8718.99 On E-146

VERB 36

ritcht Bone Pixed Mornery Bork Sun Check

Program listing

Verify GAN System to Standly Mees.

Repeat paragraphs 6.

RR/CDU Control Test

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the K-14K anter the following

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Vector Fox CDU Fall and Tracker

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APOLLO GEN Specification

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APOLLO GEN Specification
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S. Swindy

6.3.7.401

333.74

6.8.7.31

6.2.7.3.3

1-000-00-00 L 50-

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APOLLO GEN Specification

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AMOLLO CAN Specification
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ND1002380

OR CAUTION/WARRING

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VISITS-MOUNT Planking

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IPOLLO GAN Specification

ND1002380 REV D

Service of the State (2007 - 2 U. II. authority

Secretary Secretary (Latting)

PERSONAL PROBEET SO CHEET

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APOLIA GEN Specification

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APOLLO GEN Section

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APOLLO GEN Specification

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APOLLO GâN Specification

- ND1002880 PEV 1

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APOLLO GAN Specification

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APOLLO GAN Specification

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APOLLO GAN Specific

APOLLO GAN Spacification ND1002380 REV 5

APOLLO GAN Specificaling

KNIK BUILD

MR. 12. 3. 11

TERB 41 NOUN TO ENTR

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VERB 25 NOUN 07 KHTH

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T Fungtional Accuracy To

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ENTR

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APOLLO GAN Specificatio

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KATAUT TARK INFORMATION

Program Jul Mopley

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LUMINARY #0 flight-re

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EXXX. XX

SPECIFICATION FOR LIK GAN STRUCK (KEC)

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			= 3	

APOLLO GAN Specification

redecesso by

||(3 = +10638 (tape mumber)|



12 = +10545 (Tape number)

On the RESTART lamp to lit.

Cantion lamps are not lit.

when the impo reader stops, verti-| 131 = 001(a)|





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perceiciate K-GTANT tapo for ING As

Ross XXX XX Mayo Baso Asimuth

the - XX. XXX Site Latitude



When Tage Bender stops, before continuing. 23.8.12.6

Sweetly DRECK Boar & discloses 400007

the following on 15-140:

A POILIO Glill Specificatio

4"

rd Wig-Trmp (CG 230) ~

APOLLO GEN Sescificatio









A POIALO CAN Appelines for

Start Time Render.

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36,17755

APOLLO GUN Esseinomo

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VERB 21 NOON 10 ENTR

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icalor Frij Jeans Danie Principal Alami

In which case the contents of Channel IV will contain the cetal average

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AND FOR STANKING TO SEE

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Total Sa Appendix 11.5

G-3-25.

CONTROL OF THE PROPERTY OF T

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VARR 64 NOUN IX (FIRM)

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AROLLO Galt specification

Chris The Stander.

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APOLLO GUN Specification

POST INSTALLATION CHECKOUT PROCESS

APPROTECTION FOR LM GAN SYSTEM (SEC



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DENTIFICATION

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re Lama Took by entering to

VERB 16 NOUN 20 ENTR

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VERB-HOUN Flashing

VERB-HOUN diapley.

On the DREY variety the "VEL" light to

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In the DSKY verify that the second spare camp under the OPR ERR light. ON and the first store is OFF.

5.2.1.5.2.2.4 On Keld

On the Disk'y

to EOAD, not TAPE/KEY

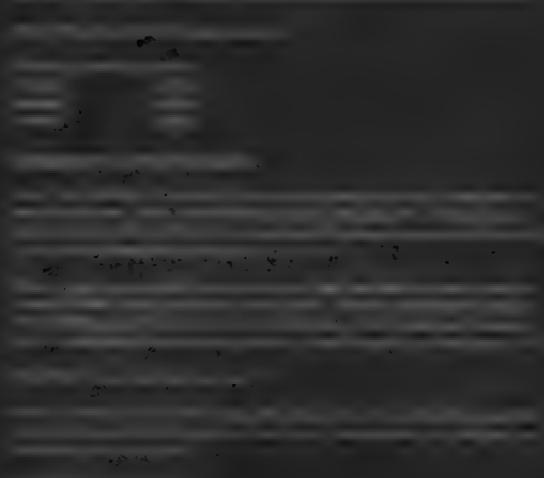
APOLLO GEN Specificati

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TOO WALL ING IS ONLY (GG 9771),
So wall ing is over (GG 9672)

APOLLO GAN Specification



PGNCS Fower Supply Tests

) (GG 4300) shakk ow notween +45 and +123 and −1.

PC IMU STANDBY MUS (OG 1616) all

APPOLO GEN Specification

101002580 REVE

AROLLO GAN Specifics

A TOLLO GAN Specific

CAUXION TARBUNG point the LOC Warning light is on.

3, 3, 10, 2, 17

5.2-10.2-24.1 On E-148, other the following suggested

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6, 0, 10, 2, 20

1. 3. 10, 2. 27 | lineard the final C-SIART autting.

E 1310, 2, 31

11.33 (0.44)

APOLIO GAN Specification

MASTER ALARM puebb



APOULO COM STRANSFORM

APOLLO GAN Specification

6.9.11.9.1

1, 2, 11, 10, 1

3.8 Marie K

3, 3, 11, 14,

6, 3, 11, 11, 1

0, 3, 11, 11, 3

S. S. H. H. C.

SER. 11, 11, 6

0.3 11, 15,

APOLIO GAN Specifica

APOLLO GEN Specificado. No tensos de la compositivação

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APOLLO GIN Specific don

APOLLO GAN Specification ND1002880 REV =

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APOLLO GAN Specificalism

DESTRUCTION



APOLLO GAN Specification

RD1002380 REW 1

(s 157 - Automorphism)





rig. 2). Lio Myre in more than 3 evereboots.

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TYPICAL STAR LOOP RESPONSE TO STEP DESCRIP



NEW W

Meetify the INO ATT light [

6, 2, 15, 17

shatt diaptay

TRANSMIN AND ADDRESS OF PARTIES

The same of the fallowing

On K-168 caler the following:

the MARK X nuchhutten

R1 = XXX, XX (Curnor Angle) R2 = XXX, XX (Cultral Angle) R5 = XXXXX (Perilien Code)

PARKET AND LIGHT (ANAVO) From 6.7.15,7.5DESCRIPTION OF THE CANAVO From 6.2.15,1.2

VKRB 38

APOLLO GAN Specification Name of the American

Changes VERS OF HOUSE OF MARKET

in K-stalki Tone for 151 Ci

12 = 410540 (Tage 3to)

When the Tane Beeder elem, prove KRY RECKASE | Verify the NO ATT light on the Disky is hit. Whit is success; before presenting.

Di Coarse Brens

Int up pusher

Shaft CDU Coarne Exame

CGSS28 Committee CDD Committee

Carling, Start the Tape Bender.

When the Tape

APOLIO GEN Precifica

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APOLICO (* N Sp. ci 7 - 46) ND1002380 REV 1

COLLO GAM Specification

Then Beader.

Tope Reader stops, worlfy RR CDU Fall and Tracker Dorm Cold in appreximately 10 seconds.

When the Tape Render stone, verify the following

6.3,27,400

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APPENDING TO BELLEVILLE

NEW HAPP NEDWER FORMAN

ADDENDUM!

SCOPE: The following changes are required to make ND1002380 applicable as G&N System technical support documentation for systems containing LAUMINARY 131 flight ropes.

Change 1: Paragraphs 6, 2, 2, 4, 1, 5, 3, 1, 5, 3, 5, 3, 1, 5, 3, 1, 5, 3, 3, 2, 6, 3, 1, 5, 1, 3, 1, 6, 3, 1, 5, 1, 3, 4

In each of these paragraphs, change the address entry from 01036 to 01035.

Change 2: Paragraphs 6, 2, 4, 14, 6, 5, 6, 5, 5, 3, 7, 25, 6, 3, 9, 21, 6, 3, 12, 3, 16

In each of these paragraphs, charge the address estry from 01303 to 01300.

VIDENCE SEA A

ADDENDUMII

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ADDENDUM HI

(This addressam the loved)

APULLO G&N Specification ND1002380 REV F

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